

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: BE  
BRANCH: BIOTECHNOLOGY

SEMESTER : VI  
SESSION : SP/19

SUBJECT: BT6023 PLANT AND AGRICULTURE BIOTECHNOLOGY

TIME: 3 Hours

FULL MARKS: 60

**INSTRUCTIONS:**

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
  2. Candidates may attempt any 5 questions maximum of 60 marks.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) What is the use of explant in *in vitro* culture? [2]  
Q.1(b) Describe about various media components that are used in *in vitro* culture. [4]  
Q.1(c) What are the benefits and limitations of *in vitro* culture in plant biotechnology? [6]
- Q.2(a) What do you mean about de-differentiation? [2]  
Q.2(b) Describe about clonal propagation as well as its advantages. [4]  
Q.2(c) What do you understand about somaclonal variation? Describe its applications. [6]
- Q.3(a) Write about the growth pattern of cells in suspension culture. [2]  
Q.3(b) Describe about cell cycle synchronization and its applications. [4]  
Q.3(c) Justify that suspension culture has important role in the production of secondary metabolites and other plant derived chemicals. [6]
- Q.4(a) Write about protoplast culture. [2]  
Q.4(b) How isolation and purification of protoplast is performed? [4]  
Q.4(c) Describe about somatic hybridization and its applications. [6]
- Q.5(a) Enumerate about different abiotic stresses and their effects on plants. [2]  
Q.5(b) Write the strategies towards development of crops adaptable to biotic stresses. [4]  
Q.5(c) Draw schematic diagram describing various steps involved in *Agrobacterium* mediated plant transformation as well as write its importance. [6]
- Q.6(a) What do mean about molecular farming? [2]  
Q.6(b) Describe about transgenic plants as well as its role in the development of value-added crops. [4]  
Q.6(c) What are different antisense RNA strategies used for inhibiting the expression of target genes? Describe its application. [6]
- Q.7(a) What do you mean about nanotechnology? [2]  
Q.7(b) Write the uses of remote sensing in agricultural sciences. [4]  
Q.7(c) Discus about terminator technology as well as its applications. [6]

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